REMARKS

The application contains claims 1-19. In view of the foregoing amendments and following remarks, Applicants respectfully request allowance of the application.

THE DRAWINGS OBJECTIONS AND CLAIM OBJECTIONS HAVE BEEN OVERCOME.

FIG. 1 has been amended as requested.

All revisions suggested in ¶ 4 of the Office Action have been adopted with the exception of claim 9. In our view, the presentation of claims 8 & 9 is preferred and perfectly clear. In claim 9, by labeling the additional instruction segment as "second," there can be no ambiguity that the instruction segment of claim 8 is the first. This is not a huge issue, however, and if the examiner remains adamant regarding the suggested amendment, he is authorized to do so by an examiner's amendment.

JOURDAN, ET AL., XTENDED BLOCK CACHE IS NOT PRIOR ART.

Applicants submit herewith a 'disclaiming affidavit' from Yoav Almog, Mattan Erez and Adi Yoaz, which indicates that they are not inventors of the subject matter claimed herein. See, MPEP § 2132.01 (p. 2100-75). The Xtended Block Cache article is not a valid prior art reference and, therefore, the § 102(a) rejections [¶¶ 6-26] should be withdrawn.

Lihu Rappaport has been added as an inventor.

THE CLAIMS DEFINE OVER PELEG AND PATEL.

Applicants respectfully request withdrawal of the obviousness rejections based on Peleg and Patel [¶¶ 28-49] because they improperly ignore recitations of the pending claims. The Office Action acknowledges that these references neither teach nor suggest storing instructions in reverse program order but, relying on the Federal Circuit's Gulack and Lowry cases, the Office Action that 'descriptive material' presented in the claims cannot distinguish the art. Applicants respectfully disagree.

The Office Action's cited case law does not support its own analysis. Neither case permits so-called descriptive material to be ignored for purposes of an obviousness analysis:

> Lowry's data structures are physical entities that provide increased efficiency in computer operation. They are not analogous to printed matter. The Board is **not at liberty** to ignore such limitations. In re Lowry, 32 F.3d 1579, 1584 (Fed. Cir. 1994) (emphasis added).

> Differences between an invention and the prior art cited against it **cannot be ignored** merely because those differences reside in the content of printed matter. In re Gulack, 703 F.2d 1381, 1384 (Fed. Cir. 1983) (emphasis added).

The Federal Circuit reversed the PTO Board's obviousness analysis in both cases. The Examiner is not permitted to dismiss claim elements as being 'descriptive material' in an obviousness rejection. As the Examiner acknowledged, the Peleg and Patel references both fail to teach or suggest storing instructions in reverse order. Therefore, the obviousness rejection must be withdrawn.

Applicants respectfully suggest that the Examiner erred when he concluded that the claims recite descriptive materials. Claim 1, for example, recites:

> 1.   An instruction segment comprising a plurality of instructions stored in sequential positions of a cache line in reverse program order.

This recites **structure** – positional relationships among stored instructions. They do not define descriptive material. The MPEP suggests that non-functional descriptive material corresponds to the content of stored data such as music. MPEP § 2106. Here, the specification clearly identifies functional differences that exist between the reverse-ordered instruction segments of the pending claims and the forward-ordered storage of other systems. For example, they permit two largely redundant instruction segments to be merged when stored in a cache line (e.g., FIG. 4). They also permit extension of an instruction segment without having to re-index the cache systems (see, p. 6, lines 19-29). The claims do not recite descriptive material and, therefore, the Office Action's disregard of the reverse order limitation is improper. This is a second basis on which the obviousness rejections based on Peleg and Patel must be reversed.

CLAIMS 1-4 DEFINE OVER PELEG AND PELED

Applicants respectfully request withdrawal of the obviousness rejection to claims 1-4 based on Peleg and Peled [¶¶ 50-55] because the art fails to teach or suggest the subject matter of the pending claims. With respect to these rejections, the Office Action makes no less

than five statements regarding issues that allegedly would have been known by a worker of ordinary skill in the art, without a single citation of prior art in support:

- one of ordinary skill in the art would have recognized that multiple entry points requires the head of the segment to be extended,
- instructions need to be moved to higher addresses so that the pointer to the front of the segment is not changed,
- one of ordinary skill in the art would have recognized that the head and tail pointers are arbitrary,
- switching the head and tail pointers will allow the pointer to the segment to remain unchanged,
- it would have been obvious to store instructions in reverse order so that cache redundancy can be reduced with little effort.

Applicants respectfully request citation of art to document the Examiner's theories. Peleg, Patel and Peled certainly fail to teach this subject matter expressly. Peled identifies a need in the art to allow trace segments to be entered from multiple entry points and yet he still shows instructions being stored in program order. One would expect that, if this subject matter were indeed obvious, there would be an express teaching somewhere, in some prior art reference, to suggest it. All three of the Examiner's references, Patel, Peleg and Peled, fail to teach this subject matter.

Incidentally, despite his identification of a need for multiple entry points, Peled's solution differs greatly from the system claimed. In FIG. 10 [Col. 14:33-48], Peled explains that in a build mode, the system predicts addresses that will be followed from fetched instructions. Ultimately, if the system determines that a predicted address matches an address of a previously constructed block, it switches out of build mode to execution mode. Thus, if blocks A C D are already built and the system is building a block for B, which will flow to block C, Peled's system ceases to build B once it detects that the instructions of block C are next to be executed. Peled satisfies his stated need in the art without reversing the order of program instructions.

Applicants respectfully request withdrawal of the obviousness rejections to claims 1-4 based upon Peleg and Peled. Absent that, Applicants respectfully request citation of art to support the inferences made in the Office Action noted above.

CLAIMS 5-19 DEFINE OVER PATEL AND PELED.

Applicants also request withdrawal of the obviousness rejections to claims 5-19 based on Patel and Peled [¶¶ 56-78] because the art fails to teach or suggest all elements of the pending claims, specifically the storage of program instructions in reverse program order.

As with the rejections to claims 1-4 above, the Office Action alleges that it would have been obvious to store program instructions in reverse program order. The cited prior art, of course, does not teach this subject matter. Again, as with the rejections of claims 1-4, the Office Action makes several unsupported assumptions regarding what a worker of ordinary skill would know based upon Peled's statement that there is a need to provide multiple entry points for traces. As noted, Peled himself does not reverse the order of program instructions even though it is his teaching that allegedly renders this feature obvious. Applicants respectfully request that the Examiner document these theories with citation to prior art.

The references themselves contain no teaching to reverse the order of stored instructions within an instruction segment. Instead, both references disclose UOPs stored in regular program order. Absent some express teaching to change the order of instructions, the subject matter of these claims is not obvious. Applicant respectfully requests that the rejections be withdrawn.

CONCLUSION

The Office Action admits that no reference teaches or suggests the basic idea of storing program instructions in reverse-program order in a segment cache. The claims define novel, non-obvious subject matter and, therefore, must be allowed.

Applicants respectfully request allowance of the application.

Respectfully submitted,

Date: 2/29/04

Robert L. Hails, Jr.
Registration No. 39,702
(Attorney for Intel Corporation)

KENYON & KENYON
1500 K Street, N.W.
Washington, D.C. 20005
Ph.: (202) 220-4200
Fax.: (202) 220-4201